

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A process for the fabrication of an inertial sensor with failure threshold, comprising the steps of:

forming, on top of a substrate of a semiconductor wafer, ~~at least one a~~ sample element embedded in a sacrificial region, the sample element having a weakened region;

forming, on top of said sacrificial region, a body connected to said sample element at a point away from the weakened region; and

etching said sacrificial region, so as to free said body and said sample element.

2. (Original) The process according to claim 1, in which the step of forming said sample element comprises:

forming a first layer of a first material, which coats said substrate;

forming a second layer of a second material, which coats said first layer;

shaping said second layer, so as to define said sample element; and

forming a third layer of said first material coating said first layer and said sample element.

3. (Original) The process according to claim 2, in which said first material is a dielectric material and said second material is a conductive material.

4. (Original) The process according to claim 3, in which said first material is silicon dioxide and said second material is polysilicon.

5. (Cancelled)

6. (Currently Amended) The process according to claim 5~~1~~, in which the step of making ~~at least one~~said weakened region comprises the step of defining a narrowing of said sample element.

7. (Original) The process according to claim 6 in which said step of defining a narrowing portion comprises forming notches in said sample element.

8. (Currently Amended) The process according to claim 5~~1~~ in which the step of making ~~at least one~~said weakened region comprises making a groove extending between opposite edges of said sample element.

9. (Original) The process according to claim 8, in which the step of making a groove comprises performing an etch of controlled duration of said sample element .

10. (Original) The process according to claim 8 in which the step of making a groove comprises:

forming a stop layer inside said sample element; and
etching said sample element until said stop element is reached.

11. (Currently Amended) The process according to claim 1 wherein the step of forming ~~at least one~~said sample element comprises defining ~~at least one~~an anchoring pad of said sample element.

12. (Original) The process according to claim 11, in which the step of etching said sacrificial region is interrupted before removing residual portions of said sacrificial region underlying said anchoring pad.

13. (Currently Amended) The process according to claim 1, further comprising making, before performing the step of forming said body, ~~at least one~~ a first opening through said sacrificial ~~region~~, region, which exposes one end of said sample element, and making second openings, which expose respective portions of said substrate.

14. (Original) The process according to claim 13, in which the step of forming said body comprises:

growing an epitaxial layer, which extends on top of said sacrificial region and through said first opening and said second openings; and
etching said epitaxial layer until said sacrificial region is reached.

15. (Original) The process according to claim 14, in which, during the step of etching said epitaxial layer there are defined anchorages connected to said substrate and elastic elements connecting said body to said anchorages.

16. (Currently Amended) ~~A method for manufacturing an inertial sensor, comprising:~~

~~forming, on a semiconductor substrate, a sample element having a first end coupled to the substrate, The process according to claim 1 wherein the sample element being is~~
configured to break under a preselected strain; and

~~forming, above the sample element, a semiconductor material body coupled to a second end of the sample element.~~

17. (Currently Amended) The ~~method~~ process of claim ~~16~~ 1 wherein the sample element has a T shape, ~~the~~ a first end of the sample element forming a cross-bar portion of the T and being coupled to the substrate at extreme ends of the crossbar, ~~the~~ and a second end of the sample element extending from a central portion of the crossbar to form the T.

18. (Currently Amended) The ~~method~~process of claim ~~16~~1, further comprising forming an additional sample element having a first end coupled to the substrate, a second end coupled to the semiconductor material body, and configured to break under ~~the~~a preselected strain.

19. (Cancelled)

20. (Currently Amended) The method of claim ~~19~~1 wherein the weakened region comprises a narrowed region of the sample element.

21-33. (Cancelled)

34. (New) The process of claim 1 wherein said step of forming said sample element comprises forming a plurality of sample elements, of which said sample element is one, and wherein said body is connected to each of said plurality of sample elements.

35. (New) The process of claim 1, further comprising forming, in said semiconductor wafer, a test circuit configured to detect a break in said sample element.

36. (New) A process for the fabrication of an inertial sensor with failure threshold, comprising the steps of:

forming, on top of a substrate of a semiconductor wafer, a conductive sample element embedded in a sacrificial region;

forming, on top of said sacrificial region, a body connected to said sample element; and

etching said sacrificial region, so as to free said body and said sample element.

37. (New) The process of claim 36 wherein the conductive sample element is shaped so as to be subject to a stress when the body is outside a relative resting position with respect to the substrate, and wherein the conductive sample element is configured to undergo failure in a controlled way when subjected to a stress of pre-set intensity.

38. (New) The process of claim 36, further comprising forming, in said semiconductor wafer, a test circuit configured to detect a change in electrical resistance of said sample element.

39. (New) The process of claim 36 wherein the body is mechanically and electrically connected to the sample element.

40. (New) A process for the fabrication of an inertial sensor with failure threshold, comprising the steps of:

forming, on top of a substrate of a semiconductor wafer, a sample element embedded in a sacrificial region;

forming, in said sacrificial region, a via over said sample element;

forming, on top of said sacrificial region, a body connected to said sample element through said via; and

etching said sacrificial region, so as to free said body and said sample element.

41. (New) The process of claim 40 wherein the step of forming a sample element comprises the step of making a weakened region of said sample element.

42. (New) A process for the fabrication of an inertial sensor with failure threshold, comprising the steps of:

forming, on top of a substrate of a semiconductor wafer, a sample element embedded in a sacrificial region, the sample element configured to break when subjected to a preselected level of acceleration;

forming, on top of said sacrificial region, a body connected to said sample element; and

etching said sacrificial region, so as to free said body and said sample element.

43. (New) The process of claim 42, further comprising forming an additional sample element, and wherein said body is connected to said sample element and said additional sample element.